PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Jiang, et al.	**Art Unit:**	1775
Serial No.:	10/711,154	**Examiner:**	Timothy M Speer
Filed:	08/27/2004		
Docket No.:	A382-USA		
For:	Material and Method to Prevent Low Temperature Degradation of Zirconia in Biomedical Implants		

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AMENDED APPEAL BRIEF (37 C.F.R. § 41.37(c)(1)(v))

This brief is in furtherance of the Appeal Brief, filed in this case on August 08, 2006 and responds to Notification of Non-Compliant Appeal Brief mailed 08/24/2006.

SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 is an independent claim and claims 2-5 are dependent on claim 1. Claim 13 is an independent claim and claim 14 is dependent on claim 13.

Claim 1

Independent claims 1 defines a degradation resistant composition of matter for use in living tissue as an improvement over alumina and other ceramics at para 0002. The degradation problem, a destructive phase transformation, that occurs in the claimed yttria-stabilized tetragonal zirconia polycrystal [Y-TZP] material when exposed to living tissue, is addressed by Applicants at paras 0006-0008. The superior physical properties that provide motivation for selecting yttria-

stabilized tetragonal zirconia polycrystal [Y-TZP] are defined at para 0005.

The alumina coating selection is defined as being bioinert and well known for implant applications at para 0002. The ion beam assisted deposition [IBAD] process is defined at para 0017 as it is applied to a YTZP material after it has achieved its final shape. The explanation includes the conformal coating result that is achievable by the IBAD process and that is not available by a line-of-sight coating process, para 0017. Alternate deposition processes are mentioned and dismissed, most known processes are of course line-of-sight deposition processes. The unique IBAD-produced conformal coating that is dense and strongly adherent when very thin is discussed in paras 0017 -0018. The IBAD deposited alumina's unexpected results in preventing the destructive low-temperature degradation of Y-TZP in moist environments are defined in para 0017.

The criticality of the alumina coating that results from an IBAD deposition process having a total porosity of less than about 1.0 percent is defined in para 0021, where the high bulk density [which as a well known relationship with open and closed porosity] importance is also discussed.

The reduction from 50% to less than 5% of the destructive monoclinic phase after about 140 hours, that is achieved with an IBAD alumina coating, is presented in FIG. 2 for up to 200 hours in saturated steam.

Claim 13

Independent claim 13 defines a degradation resistant composition of matter for use in living tissue at para 0002. The degradation problem, a destructive phase transformation, that occurs in the claimed yttria-stabilized tetragonal zirconia polycrystal [Y-TZP] material when exposed to living tissue, is discussed by Applicants at paras 0006-0008. The superior physical properties that provide motivation for selecting yttria-stabilized tetragonal zirconia polycrystal [Y-TZP] are defined at para 0005.

The alumina coating selection is defined as being bioinert and well known for implant applications at para 0002.

The alumina coating's unexpected results in preventing the destructive low-temperature degradation of Y-TZP in moist environments are defined in para 0017 and further are discussed in para 0018 with respect to the extreme thinness of this deposited alumina coating.

The criticality of the alumina coating that results from the deposition process having a total porosity of less than about 1.0 percent is defined in para 0021, where the high bulk density importance is also discussed.

Respectfully submitted,

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